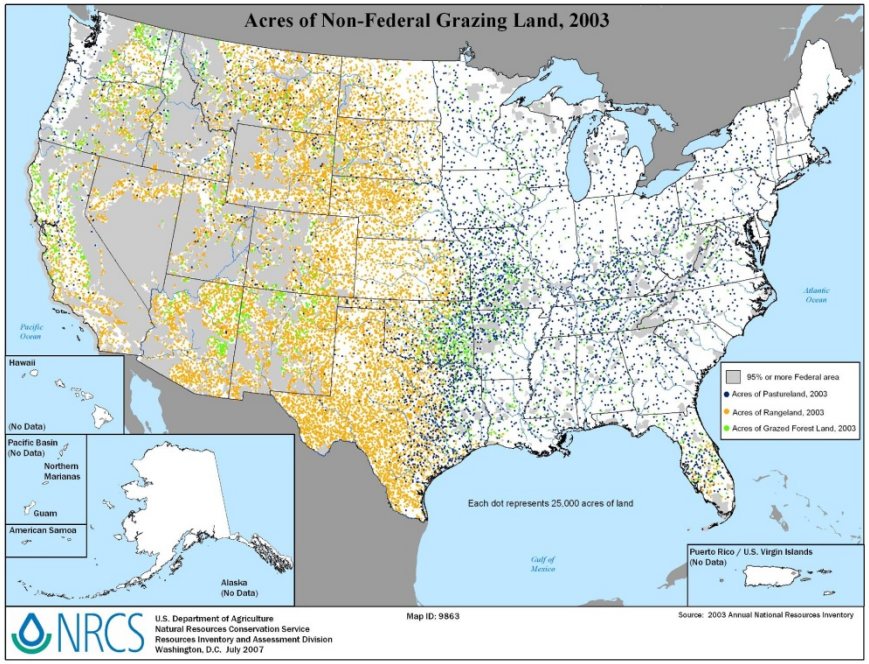
Pastureland Conservation Effects Assessment Project (CEAP)
NEPC 2010 Report

CEAP is:
Multi-agency effort to quantify environmental outcomes of conservation practices applied to pastureland



USDA

- **NRCS**
- **ARS**
- **NIFA**

Pastureland Conservation Effects Assessment Project (CEAP)
NEPC 2010 Report

Pastureland Literature Synthesis

Pastureland National Resource Inventory

Pastureland CEAP Research

Goals for Pastureland Literature Synthesis

1. Evaluate literature for ecosystem benefits
   - Focus on literature for desired benefits
   - Some gray literature may be included
   - Scope is mainly on Eastern US
   - Assess science support of practices

2. Write book (7 chapters) for NRCS (summer 2010)

3. Reprint book with supporting data electronically

4. Write Executive Summary for policy makers

5. Make recommendations for research

Pastureland Literature Synthesis Organization

Project Coordinator: Jerry Nelson, University of Missouri

USDA/ARS Liaison: Matt Sanderson

USDA/NRCS Project Director: Leonard Jolley

Evaluation Team Leaders for Conservation Practices:

1. **Pasture and Hay Planting (Code 512), Dave Barker**
2. **Prescribed Grazing (Code 528) Lynn Sollenberger**
3. **Forage Harvest Management (Code 511) Ken Albrecht**
4. **Nutrient Management (Code 590), Wes Wood**

Mock up of Book Cover and Table of Contents

Environmental Outcomes of Conservation Practices on Pastureland

The Pastureland Conservation Effects Assessment Project (CEAP)

Table of Contents

Chapter 1. Pastureland and Hayland in the U.S.: Conservation Practices, Economics, and Ecosystem Services.
Matt Sanderson, USDA-ARS Pasture Systems and Watershed Management Research Unit, University Park, PA; Leonard Jolley, USDA-NRCS Resource Inventory and Assessment Division, Beltsville, MD; James P. Dobrowolski, USDA-NIFA, Rangelands and Grasslands Program, Washington, D.C.

Chapter 2. Pasture and Hayland Planting
David Barker, Team Leader, The Ohio State University; Twain Butler, Samuel Roberts Noble Foundation; Jennifer MacAdam, Utah State University; R. Mark Sulc, The Ohio State University

Chapter 3. Prescribed Grazing
Lynn Sollenberger, Team Leader, University of Florida; Carmen Agouridis, University of Kentucky; Alan Franzluebbers USDA-ARS, Watkinsville, GA; Lloyd Owens, USDA-ARS, Coshocton, OH; Eric Vanzant, University of Kentucky

Chapter 4. Forage Harvest Management
Ken Albrecht, Team Leader; University of Wisconsin-Madison; Jerry Cherney, Cornell University; Scott Hygnstrom; University of Nebraska-Lincoln

Chapter 5. Nutrient Management
Wes Wood, Team Leader; Auburn University, AL; Miguel Cabrera, The University of Georgia; Randy Jackson, University of Wisconsin-Madison; Brad Joern, Purdue University; Phillip Moore USDA/ARS, Fayetteville, AR

Chapter 6. An Integrated Assessment
C. Jerry Nelson, University of Missouri-Columbia

Chapter 7. The USDA-NRCS Perspective
Pat Shaver, USDA-NRCS, Portland, OR

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chapter 5

Nutrient Management on Pasturelands

C. Wesley Wood, Philip A. Moore, Brad C. Joern, Randy D. Jackson, and Miguel L. Cabrera

Judicious use of nutrients is unprecedented in importance for management of the millions of acres of U.S. forage and hay crops (Fig. 1) owing to its agronomic, economic, and environmental implications. The primary goal of nutrient management is to promote biomass productivity that provides profit for producers while minimizing negative environmental impacts. Additional goals of nutrient management include improvement of soil quality and increased soil carbon (C) sequestration.

The scientific literature is replete with examples of forage response to fertilization that results in maximum agronomic yield. However, when fertilizer costs are considered, maximum forage yields are often not in the best interest of producers and aiming for maximum economic yield with less nutrient inputs makes sense. This is especially true in today's economic climate because fertilizer costs (especially nitrogen (N)) are directly tied to fluctuating energy costs.

While production and producer profit are important, protecting the quality of soil, water, and air resources is imperative to sustain the human race. According to the U.S. Environmental Protection Agency (USEPA) 2004 national water quality inventory report to congress, nearly 44% of U.S. rivers and streams, 64% of lakes, ponds and reservoirs, and 30% of bays and estuaries waters are too impaired to meet one or more of their designated uses (USEPA, 2009). In this report, agriculture was implicated as negatively impacting 38% of impaired rivers and streams, 16% of impaired lakes, ponds and reservoirs, and 10% of impaired bays and estuaries.

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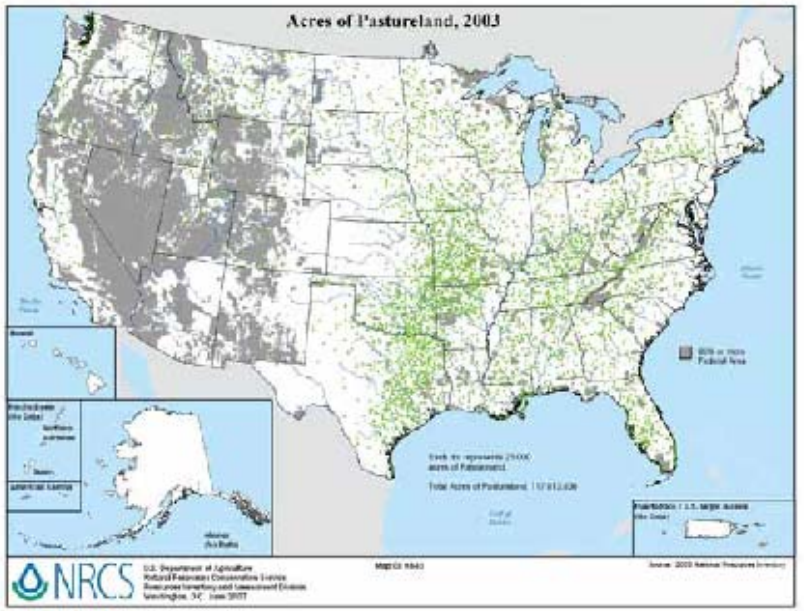


Fig. 1. U.S. pastureland acreage.

General Conclusions

1. Most practices are supported by literature
2. Overall, there is a need for monitoring progress
   -insure the practice is working
   -provide counsel for adaptive management
3. Need for continuing education and other learning opportunities for landowner to effectively use adaptive management practices
4. Need for research funds to test the practices early on with focus on practice and consider models
5. Need social scientists to learn what drives adoption

Pastureland Literature Synthesis

Preliminary findings presented at three symposia:

American Forage and Grassland Council, Grand Rapids, MI June 2009

Crop Science Society of America, Pittsburgh, PA November 2009

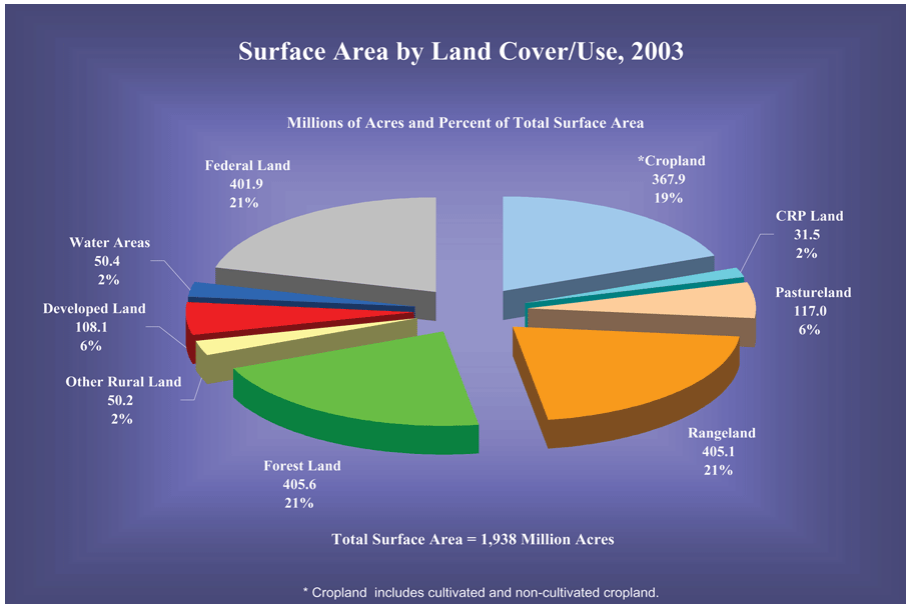
4th National Grazinglands Conference, Reno, NV December 2009

Presentations are available at :
http://www.afgc.org/mc/page.do?sitePageId=68416&orgId=afgc

USDA-NRCS
Pastureland National Resource Inventory (NRI) Pilot Project

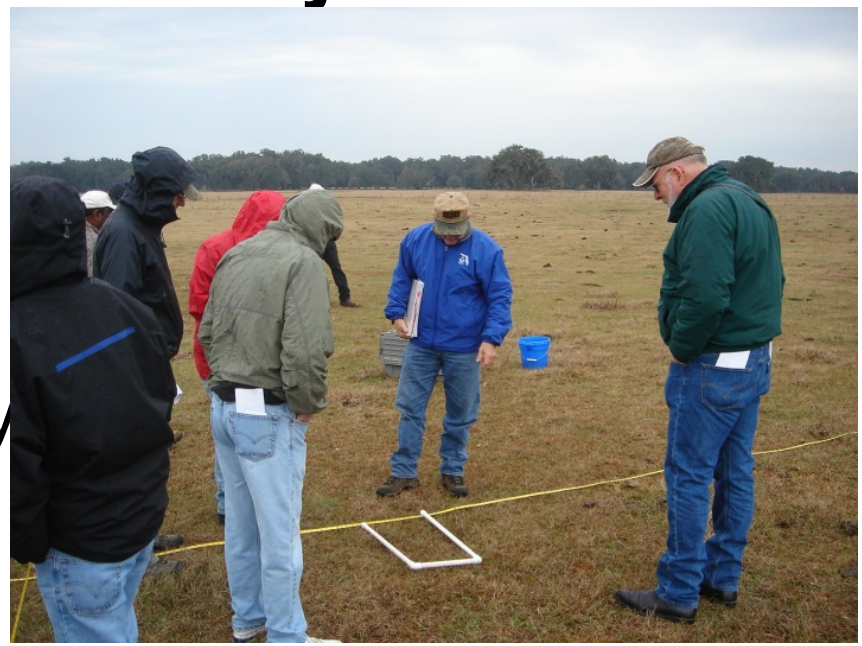
- A statistical survey of land use and natural resource conditions and trends on U.S. non-Federal lands.

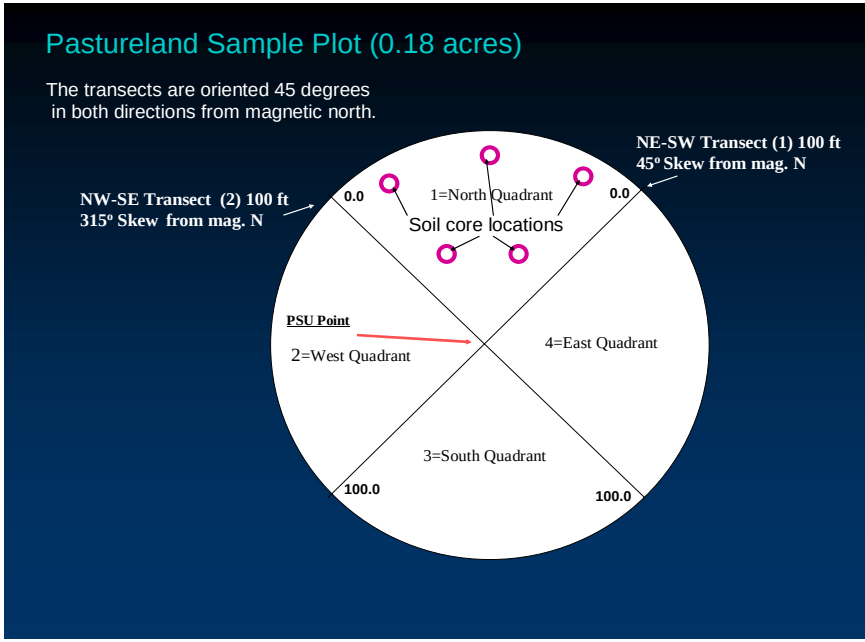
- The NRI provides the scientific framework for the National Assessment component of CEAP



Pastureland National Resource Inventory (NRI) Pilot Project

- Scientific design of sampling protocol
- Adapting sampling methodology
- Data for future assessments, modeling
  - NRCS Beltsville, Ft. Worth, regional and state specialists
  - ARS-University Park, PA
  - ARS-Las Cruces, NM



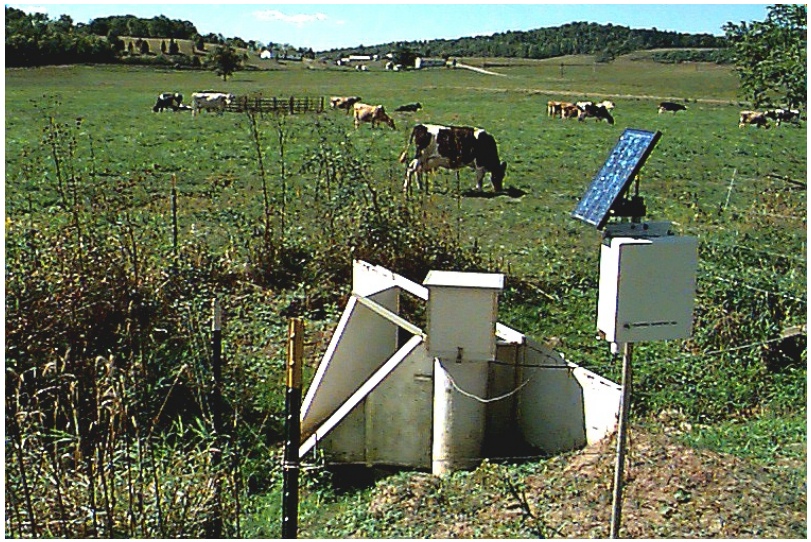


Pastureland CEAP-Related Research

USDA-ARS Watkinsville, GA

- Soil carbon management and sequestration under pastures
  - Soil organic matter 75%> than fields under conventional tillage and 39% greater than conservation tillage

- Nutrient management of hay and pastureland



Pastureland CEAP-Related Research

USDA-ARS Coshocton, OH

North Appalachian Experimental Watershed

- Intensive grazing management vs. continuous grazing management
  - -Forage and animal productivity
  - -Soil and water quality

- Soil carbon management in pastures
  - Pasture soil carbon > than no-till corn/soy/rye rotation

Pastureland CEAP-Related Research

USDA-ARS University Park, PA

- Spring Creek watershed
- Biodiversity in pastures
- Livestock concentration areas
- Evaluation of Pasture Condition Score system